IDEM's Surface Water Quality Assessment Program

Nutrient Sampling Program

Program Objective

The objective of this program is to obtain data on nutrient concentrations and their effects on Indiana rivers and streams. These data will also be used to provide information to develop nutrient criteria for the state of Indiana. Data collected in this program includes water chemistry and two measures of algal biomass, chlorophyll *a* and ash free dry mass (AFDM). These data will be collected three times per year (late spring, summer, and fall) at probabilistic monitoring sites following the rotating basin schedule. Water chemistry data will be collected in order to assess Indiana's water bodies such that water quality throughout the state may be characterized and problem watersheds or streams may be identified. Algal biomass will be collected from both phytoplankton and periphyton. Since there is little biomass associated with AFDM in phytoplankton samples, particulate organic carbon (POC) will be used as an alternative measurement of biomass for phytoplankton. The collection of algal biomass enables interrelationships among nutrient conditions, algal biomass, and biological communities to be identified as well as explaining nutrient thresholds causing shifts in biological communities. The effect of nutrient level relationships on aquatic life will be evaluated which will help assess the utility and feasibility of developing effect-based nutrient criteria for the state of Indiana.

Program Participants

This program is operated through the efforts of the Surveys Section, IDEM Office of Water Quality, Assessment Branch with additional efforts by the United States Geological Survey (USGS), private laboratories under contract to the State of Indiana, the aid of citizens, local governments, the Indiana Department of Natural Resources, U.S. Fish and Wildlife Service, and U.S. Environmental Protection Agency (USEPA) Region 5, Chicago, Illinois, and USEPA National Health and Environmental Effects Research Laboratory, Corvallis, Oregon.

Program Description

Media:	Surface Water: rivers, streams and drainage ditches
Study Area:	Statewide (in targeted basins based on a five year rotating basin cycle excluding the mainstem Ohio River and Lake Michigan) for Probabilistic Sampling Program
Site Selection Type:	Probabilistic Sampling: Sites are selected by a stratified random draw of perennial streams according to Strahler order as indexed through USEPA's River Reach File, version 3 (RF3)
Sampling Sites:	Probabilistic Sampling: A minimum of 38 randomly selected sites will be sampled in each of the major river basins (1-2 basins/year)
Sampling Frequency:	Water chemistry and algae will be sampled three times per year between May and October

Program Description (continued)

Data Collected: Water chemistry and chlorophyll *a*

Program Products

All water quality monitoring data and subsequent assessments will serve as integral components of the Indiana Integrated Water Quality Monitoring and Assessment Report to the EPA. Site specific data consisting of the parameters listed below will be made available to requestors. Algal, water chemistry, biological and habitat data will be evaluated to determine the effect of nutrient level relationships on aquatic life which will aid in the process of developing nutrient criteria for the state of Indiana.

WATER CHEMISTRY PARAMETERS		
PRIORITY METALS	**ANIONS/PHYSICAL**	**NUTRIENTS/ORGANICS**
Arsenic	Alkalinity	TKN
Cadmium	Total Solids	Ammonia-N
Chromium	Suspended Solids	Nitrate-Nitrite-N
Copper	Dissolved Solids	Total Phosphorus
Lead	Sulfate	TOC
Mercury	Chloride	Cyanide-Total
Nickel	Hardness	Cyanide-Free
Selenium		COD
Zinc		

Contact Information

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